

CLAIMS

1. An X-ray diffractometer, comprising
a sample stage for mounting a sample, the sample stage being
5 rotatable about an axis,
a double pinhole collimator for directing X-ray radiation to a sample on
the sample stage,
a detector for detecting X-rays diffracted by the sample, and
an analyser crystal arranged between the sample stage and the
10 detector to direct X-rays diffracted by the sample onto the detector,
wherein the analyser crystal and detector are rotatable about an axis
that is coaxial with the axis of rotation of the sample stage.
2. An X-ray diffractometer according to claim 1 wherein the size of
15 the pinhole of the double pinhole collimator nearest the sample stage is
adjustable for providing an X-ray spot on the sample of variable size.
3. An X-ray diffractometer according to claim 1 wherein a slit is
arranged between the sample stage and the detector.
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4. An X-ray diffractometer according to claim 3 wherein the slit is
arranged in front of the detector.
5. An X-ray diffractometer according to claim 1 and further
25 comprising a drive for rotating the sample stage and the detector and analyser
crystal with a ratio of rotation angles of substantially 1:2.
6. A method of X-ray diffractometry, comprising the steps of
directing X-rays through a double pinhole collimator onto a sample to
30 be measured,
diffracting the X-rays diffracted by the sample with an analyser crystal
onto a detector,

rotating the sample and rotating the analyser crystal and the detector about coaxial axes, and

measuring the diffracted X-ray intensity as a function of the angle of rotation of the sample and the angle of rotation of the analyser crystal and detector.

7. A method of X-ray diffractometry according to claim 6 and further including varying the size of at least one pinhole in the double pinhole collimator.

8. A method of X-ray diffractometry according to claim 6 and further comprising the steps of

mounting the sample on a sample stage;

rotating the analyser crystal and detector to a predetermined position;

rotating the sample whilst keeping the analyser crystal and detector in the predetermined position and measuring the X-rays reaching the detector as a function of angle of sample rotation;

determining the sample rotation angle at which the measured X-rays are at a peak and rotating the sample to that angle; and

rotating the sample and the analyser crystal and detector about coaxial axes and measuring the diffracted X-ray intensity as a function of rotation angle.

9. A method of X-ray diffractometry according to claim 6 and further comprising the step of

rotating the sample and the analyser crystal and detector with rotation speeds substantially in a 1:2 ratio.